SOLAR TORRENT
Solar Charge Controller Series

The Solar Charge Controller offers by SolarTorrent.com are for use in solar photovoltaic systems, which coordinate the working of solar panels, batteries, and loads. It adds protection functions, so that the entire system can be used safely and efficiently.

WS-C series charge controllers are applicable to all types of photovoltaic panels and various types of batteries, MCU (Micro-Processing Controller) has PMW (Pulse Modulation Wide-frequency) 0~100% variable duty cycle process. According to the types and actual charging situation of the battery, WS-C controller series can provide fast and best charging voltage and electricity from the PV panel. C30 and C60 series are equipped with advanced man-machine interactive function, so the user can adjust the charging voltage.

Function:

1. Overloading protection
2. Short circuit protection
3. Conversed discharge protection
4. Reversed polarity connection protection
5. Thunder protection
6. Low voltage protection
7. Overcharge protection
8. Batteries stop and charge voltage HVD sets up
9. Charge and low voltage LCD sets up
10. Display the capability of the battery SOC
11. Loads and comeback setups.
12. Intellectualized temperature compensation
13. Store, calculate, and display the charged AH on the LCD screen.
14. Store, calculate and display the discharged A on the LCD screen.
15. CPU control and LCD-display
16. Working temperature:-25℃-100℃

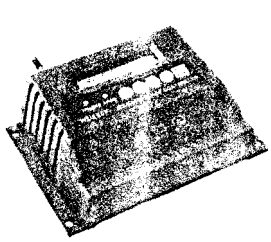
Model (LCD-display)	**WS-C2425 /20A**	**WS-C2425 /25A**	**WS-C2425 /30A**
Rated Voltage	12V/24V Automatic voltage recognition		
Max Load current	20A	25A	30A
Input current range	12V～17V/24V～34V		
Length≤1m Charge loop drop	＜0.25V		
Length≤1m Discharge loop drop	＜0.15V		
Over voltage protection	17V/34V		
Full charge cut	13.7V/27.4V		
Low voltage cut	10.5~11V/21V~22V		
Temperature compensation	-3mv/℃/cell		
No load loss	≤10mA		
Min wire area	$4mm^2$		
Ambient temperature	-25℃——100℃		

WELLSEE

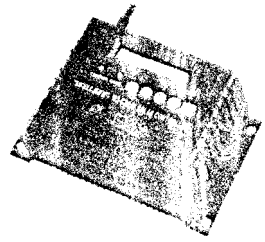
Solar Controller

WS-C2425 / WS-C2450

USER'S MANUAL



WS-C2425



WS-C2450

1. SAFETY

Full consideration to the safety of persons and property has been given when designing the products. However the incorrect connection may cause the system breakdown or even safety accident. For your safety and interests, the following rules must be complied during the operation.

Installation of this product shall be carried out by professional staffs.

Prevent any liquid spattered on the controller. Do not clean the controller with wet cloth.

Keep children and incapacity persons away from the controller.

Keep the controller away from electrical heater, heating machine and other high temperature electrical appliances; avoid the controller from direct sunlight.

Please check the rated voltage of solar panel, battery, and loads before connection. Their rated voltages all should be all 12V (or 24V).

Make sure all the positive and negative poles connections between Solar panels, Battery and Loads are correct.

The diameter of connecting cable must be match with the requirements of the current.

The total rated current of solar panel and loads must be smaller than the controller.

Components of system must be correctly and firmly connected.

Make sure the positive and negative poles of the wired battery are not short-circuited.

2. FEATURES

WS-C2425 and WS-C2450 solar charge controller are controlled by CPU, so they are able to control the charge current and decide whether to supply power to the loads according to the voltage of battery. The product has the following features:

Always keep the battery on full voltage condition.

Prevent the battery from over-charging.

Prevent the battery from over-discharging.

Prevent the battery from reverse charging to solar panels during nights.

Reverse Polarity Protection for Battery

Reverse Polarity Protection for Solar panels

When the current of the load exceeds the rated current of the controller, the controller will activate the protection mode and lock up, the LCD shows "Overload".

When the load short circuited, the controller will activate the protection mode and lock up, the LCD show "Short circuit".

When the battery voltage is low, the controller will automatically cut off the load from the system and the LCD shows "Battery low". If the voltage of battery is back to normal and the load will restart working.

Thunder protection

When the controller is normally working, the LCD will show the voltage of battery, charging current and current of loads in turn of every 5 seconds.

The controller can remember the charging current data and discharging current data of the battery.

When starts up, the controller will self-setup the charging-off voltage, the load-off voltage and the load-on voltage according to the voltage of battery. These default parameters bring into effect in the standard environment temperature (25℃).

According to varies system temperature, the controller will automatically compensate the temperature of the charging voltage.

Users could setup the charge-on or off voltage, the load-off voltage, the load-on voltage, etc, according to users' requirements.

To prevent battery from over discharging, the controller will automatically control the lowest load-off voltage of the load, which is no less than 10V (as per 12V battery) or 20V (as per 24V battery). If voltage of the battery is less than 10V (or 20V), the button "-" will stop working.

To recover the default parameters, please keep pressing the button "Menu" for more than 5 seconds.

3. CONNECTION

As indicated in diagram: Connect "+" and "-" poles of solar panel with the correct terminals on the controller (the first and second terminals from the left).

Connect "+" and "-" poles of battery with the correct terminals on the controller (the third and fourth terminals from the left).

Connect "+" and "-" poles of load with the correct terminals on the controller (the fifth and sixth terminals from the left).

Attention!

First connect the solar controller with the battery.

Correctly connect the electrodes of solar panels, battery and loads.

Choose the proper wire according to the current of the loads; it is suggested that the diameter of WS-C2425 must bigger than 4 mm^2 and WS-C2450 must bigger than 6 mm^2.

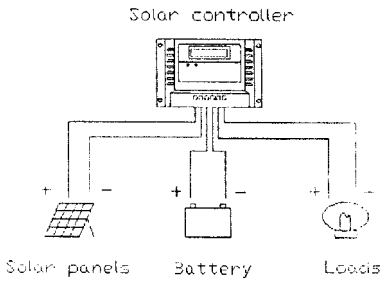
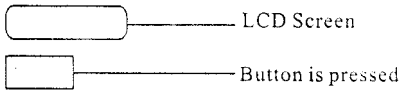


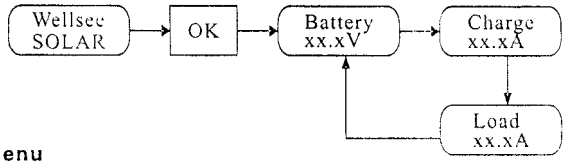
Diagram of Connection

4. OPERATION

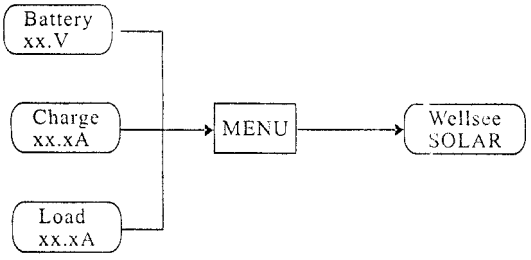
If not reset, the controller will use the default parameters.



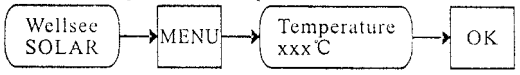
Startup



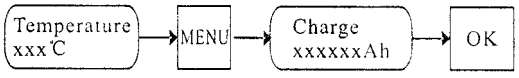
Menu



Check the system temperature

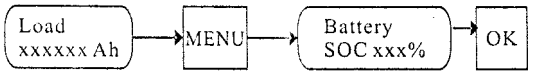


Check the charging current

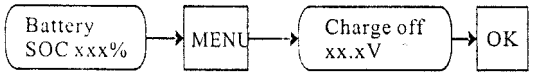


Check the discharging current

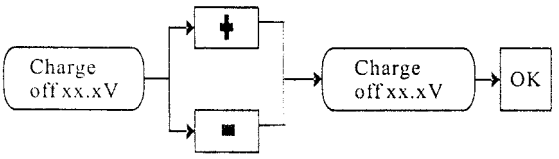
Check the battery capacitance



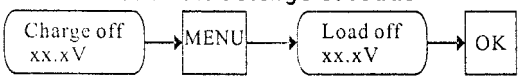
Check the charge-off voltage of battery



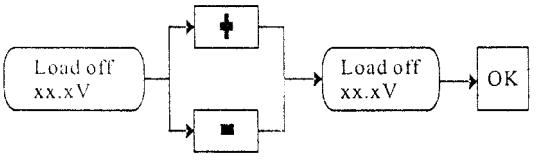
Setup the Charge off voltage of battery



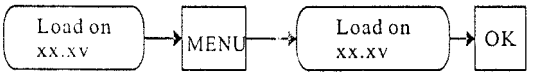
Check the load-off voltage of loads



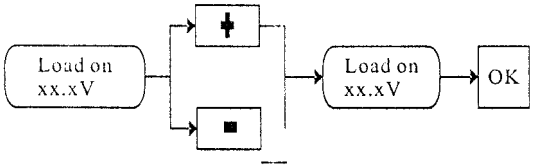
Setup the Load-off Voltage of loads



Check the load-on voltage of loads

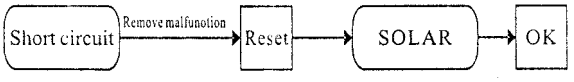


Setup the load-on voltage of loads



Startup for over-loads

Startup for short circuit



5. TROUBLE SHOOTING

Trouble: Green light goes out, the loads stops working, and LCD shows (Battery low)

Reason: Low voltage of battery

Solution: Charge the battery or change the battery

Trouble: Green light goes out, the loads stops working, and LCD shows (Over load)

Reason: Overload

Solution: Reduce the quantity of loads and then press Button (Reset)

Trouble: Green light goes out, the loads stops working, and LCD shows (Short circuit)

Reason: The loads Short circuited

Solution: Eliminating the malfunction and then press the button (Reset)

Phenomenon: Green LED is on
Loads are normally working

Phenomenon: Red LED is on
Battery is charged up strongly

Phenomenon: Red LED is flickering
Battery is charged up in constant voltage (or floating)

Trouble: Red LED goes out

Reason: Out of power

Solution: This is the common phenomenon during nights. If it is not charging for a long time, please carefully check the connection among solar panels, controller and battery.

6. ACCESSORY INSTALLATION

Standard Accessory: Near-distance thermoscope

Installation: Plug the thermoscope into the socket (top) of controller before running of controller, and then connect battery with the controller. The thermoscope will normally work after one minute. (Operate as indicated in the Fourth Chapter; the environmental temperature of controller will be showed on LCD).

Optional Accessory: Long-distance thermoscope

Such thermoscope is suitable to the following condition— the location of battery is far away from the controller.

Installation: Plug the thermoscope into the socket (top) of controller before running of controller, and then connect battery with the controller. The thermoscope will normally work after one minute. (Operate as indicated in the fourth Chapter; the environmental temperature of controller will be showed on LCD).

Technical Index:

Model	WS-C2425 20A	WS-C2425 25A
Rated Voltage	12V/24V Automatic distinguish voltage	
Loading current Max	20A	25A
Full charge cut	13.7V/27.4V	
Low voltage cut	10.5~11V/21V~22V	
Temperature compensation	-3mv/℃/cell	
No load loss	≤30mA	
Wire area Min	4mm²	
The max Wire Diameter specification:1m Voltage drop	<240mv	<270mv
Working Temperature	-25℃-100℃	

Model	WS-C2450 40A	WS-C2450 50A
Rated Voltage	12V/24V Automatic distinguish voltage	
Loading current Max	40A	50A
Full charge cut	13.7V/27.4V	
Low voltage cut	10.5V~11V/21V~22V	
Temperature compensation	-3mv/℃/cell	
No load loss	≤45mA	
Wire area Min	6mm²	
The max Wire Diameter specifi cation:1mVoltage drop	<240mv	<270mv
Working Temperature	-25℃-100℃	

Notice: WS-C4860 (48V45A、48V60A) solar controller& WELLSEE110A solar controller are coming soon!